

REMARKS

Applicant would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicant regards as the invention.

Claim 1 was rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa (JP 10-074530) in view of Yasumoto et al. (JP 10-261423). The rejection is traversed for the following reasons.

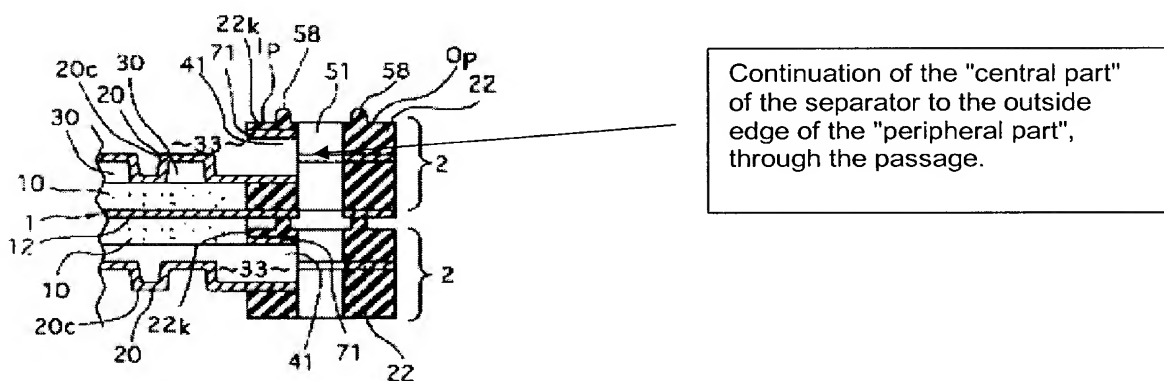
The invention defined in claim 1 is directed to a fuel cell with a fuel cell separator. The fuel cell separator has a metal central part and a rubber peripheral part, with gas passages and reaction product passages provided by the peripheral part. The rubber peripheral part includes an inner portion that overlays the central part, and an outer portion that extends away from the central part. The gas passages and the reaction product passages are formed solely through the outer portion of the peripheral part.

The Examiner cites to Matsukawa for teaching all features of the invention of claim 1, save a second face of the separator that has passage recesses formed thereon along edges of the gas passages and reaction product passages. For this feature, the Examiner looks to Yasumoto. However, as is discussed below, contrary to the Examiner's assertion, it is submitted that Matsukawa fails to teach all of the features for which it is cited. Specifically, Matsukawa fails to teach a rubber peripheral part having an outer portion that extends away from the central part with gas passages and reaction product passages formed solely through the outer

portion of the peripheral part. As Yasumoto fails to remedy this shortcoming of Matsukawa, the combined references fail to teach or suggest each and every feature of the claimed invention.

Turning to the specific teachings of the Matsukawa reference, the separator taught therein includes a central part and a peripheral part. Passages are formed through the peripheral part of the Matsukawa separator. However, contrary to the Examiner's assertion, the peripheral part of the separator does not include an outer portion that extends away from the central part. Presumably, in finding this feature taught by Matsukawa, the Examiner looks to, and misinterprets, Fig. 2, which is reproduced below.

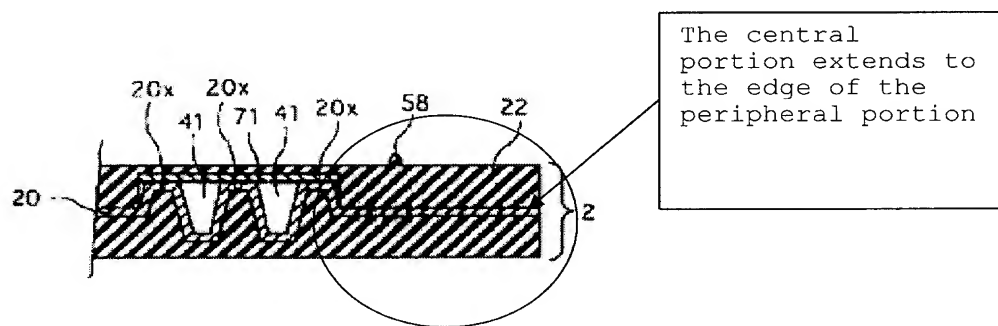
With reference to Fig. 2, the peripheral part, denoted to the right side of the figure with the reference numeral "2" and including the part shaded with lines, has a passage formed therethrough, the passage denoted by reference numeral (51). Presumably, the Examiner interpreted the figure to indicate that the central part of the separator generally ends where the peripheral part of the separator begins.



However, the central part of the separator actually extends beyond the passage (51), to the outside (right-side) edge of the peripheral part. With reference to the arrow and text box included above, the central part of the separator is

depicted as running through the passage and the peripheral part of the separator. This is shown in the figure by the piece that extends through the passage. The arrow above is pointing to the piece to facilitate the Examiner's understanding of the reference.

In further support of this position, Fig. 5 of Matsukawa is also reproduced herein. With reference to the below figure, the right-side portion illustrates the region in the separator where the passage (51) is disposed. Specifically, the passage (51) is disposed in the circled region, which is located to the right of the bump (58). Therein, it is clearly illustrated that the central part of the separator (20) extends to the far edge of the peripheral part of the separator (22).



Thus, contrary to the Examiner's assertion, Matsukawa fails to teach or suggest that "an outer portion of the peripheral part extends away from the central part, and the gas passages and reaction product passages are formed through said outer portion", as required by claim 1. Rather, the peripheral part of the separator of Matsukawa does not extend away from the central part, and the passages are formed through both the peripheral part and the central part, as opposed to just the peripheral part. Similarly, Yasumoto fails to teach or suggest this feature.

Accordingly, claim 1 recites features that are not taught or suggested by the cited art. As such, a *prima facie* case of obviousness has not been established in

support of the rejection of claim 1. Reconsideration and withdrawal of the rejection of claim 1 is requested.

Claims 2, 5, and 6 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, and in further view of Kuroki et al. (U.S. Patent No. 7,226,685). The rejections are traversed for the following reasons.

Claims 2, 5, and 6 depend from claim 1 and therefore include all features of claim 1. Further, claims 2 and 6 define the rubber member of claim 1 as being made of silicone rubber and claim 5 defines a support hole in the central part of the separator. With reference to Matsukawa and Yasumoto, the shortcomings of the references in regards to the features of claim 1 have been discussed above. In view of the above, Kuroki must remedy the shortcomings for the combined references to render the claims obvious.

Kuroki is cited for teaching a gasket for a fuel cell having a support hole defined through a central part adjacent to an edge of the central part. Further, Kuroki is cited for teaching a rubber material that is made of silicone rubber. However, Kuroki fails to teach or suggest that "an outer portion of the peripheral part extends away from the central part, and the gas passages and reaction product passages are formed through said outer portion", as required by claim 1.

Thus, Kuroki does not remedy the shortcomings of Matsukawa and Yasumoto in regards to claim 1. Accordingly, claims 2, 5, and 6 include features that are not taught or suggested by the references and are therefore considered allowable over the art based on their dependence from claim 1. Reconsideration and withdrawal of the rejections of claims 2, 5, and 6 is requested.

Claim 3 was rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, and in further view of Styczynski (U.S. Patent No. 6,113,827). The rejection is traversed for the following reasons.

The invention defined by claim 3 is directed to a method for manufacturing a fuel cell and a fuel cell separator. The fuel cell separator to be manufactured by the method of claim 3 includes a rubber peripheral part that extends beyond a metal central part and has gas and reaction product passages formed therethrough. As with claim 1, the rubber peripheral part extends beyond the central part and has the gas and reaction product passages formed solely through the peripheral part.

As claim 3 is directed to a method of forming a fuel cell separator that is similar to claim 1 in the disposition of the gas and reaction product passages relative to the peripheral part and central part, the shortcomings of Matsukawa and Yasumoto in regards to claim 1 are considered pertinent to the patentability of claim 3. Accordingly, the arguments presented above in favor of the patentability of claim 1 are hereby incorporated by reference.

As Matsukawa and Yasumoto fail to teach or suggest every feature of claim 3, Styczynski must remedy the shortcomings for the combined references to render claim 3 obvious. Styczynski is cited for teaching a method of injection molding silicone. Styczynski does not teach or suggest a fuel cell or a fuel cell separator, and is therefore silent as to the structure of a fuel cell or a fuel cell separator.

Thus, Styczynski fails to remedy the shortcomings of Matsukawa and Yasumoto. As such, the combined references fail to teach or suggest each and every feature of claim 3 and therefore do not render claim 3 obvious. Reconsideration and withdrawal of the rejection of claim 3 is requested.

Claims 4 and 10 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, and in further view of Styczynski and Murray et al. (U.S. Patent No. 5,338,497). The rejections are traversed for the following reasons.

Claim 4 is directed to a method of manufacturing a fuel cell and a fuel cell separator, where the separator has a central part and a peripheral part. Passages are defined through the peripheral part. Further, claim 4 has been amended to clarify that the central part is substantially made of metal. This amendment clarifies that the central portion is substantially made of metal, e.g., substantially free of silicone rubber, and is considered to clarify the method step of claim 4 wherein the metal central part is heated to reactively set the silicone rubber guided to the edge of the central part.

A separator having the features defined by claim 4 and formed in the method of claim 4 is not taught or suggested by Matsukawa, Yasumoto, or Styczynski. Accordingly, to render claim 4 obvious, these features must be taught or suggested by Murray.

In this regard, the Murray patent is directed to an induction heating method of forming a composite article in which an electrically conductive material, such as metal, is molded in a heat curable resin and the conductive material is heated to cure the resin by exposure to a magnetic field generated by induction coils. However, Murray does not teach or suggest the heating of a metal central portion, as required by claim 4.

Thus, Murray fails to remedy the shortcomings of Matsukawa, Yasumoto, and Styczynski in regards to claim 4. As such, the combined references fail to teach or

suggest each and every feature of claim 4, and therefore fail to render claim 4 obvious. Accordingly, reconsideration and withdrawal of the rejection of claim 4 is requested. Further, claim 10 depends from claim 4 and is therefore also considered allowable over the art.

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, in further view of Styczynski and Murray, and in further view of Tanemoto et al. (U.S. Patent No. 6,395,416). The rejection is traversed for the following reasons.

Claim 7 depends from the method defined in claim 4, and further includes a step of guiding the liquid silicone rubber over and past the edge of the central part such that the silicone rubber extends away from the central part. Then the method includes a step of forming gas passages and reaction product passages through the liquid silicone rubber at locations spaced from the central part.

As discussed above, a separator having the features defined by claim 7 and formed by the method of claim 7 is not taught or suggested by Matsukawa, Yasumoto, or Styczynski. Accordingly, to render claim 4 obvious, these features must be taught or suggested by Murray and/or Tanemoto.

The Murray patent was cited for teaching induction curing of injection molded resins. However, as with Styczynski, Murray is not concerned with fuel cells or fuel cell separators, and therefore is silent as to a fuel cell separator structure. Thus, Murray fails to remedy the shortcomings of the above references.

Tanemoto is cited for teaching a fuel cell separator having a peripheral portion that extends away from a central portion, with gas and reaction product passages formed in the peripheral part. While Tanemoto discloses some method of

injection molding the peripheral part, it is submitted that Tanemoto fails to teach or suggest injection molding the silicone rubber past the edges of the central part so as to extend beyond the central part, as is required by claim 7.

Rather, as is shown in Figs. 3 and 4A – 4C and described in Col. 4, lines 21 – 33 of Tanemoto, the peripheral part of the separator is formed by forming a first half on the central part and then forming a second half on the central part. While the individual halves may be injection molded, no portion of the peripheral parts is injection molded on the central part, such that the injection molded material would be guided past an edge of the central part.

Rather, as shown in Fig. 3, the pieces of the peripheral portion are joined to the central part in some other manner, and are not injection molded on the central part. The brief disclosure of injection molding in Tanemoto is likely directed to the peripheral pieces being injection molded and formed separately from the central part. The pieces are then joined to the central part, as is consistent with Figs. 4B and 4C.

Thus, Tanemoto fails to teach or suggest the method steps of claim 7 that are directed to the formation of the separator as claimed. Accordingly, Tanemoto does not remedy the shortcomings of the above references with regard to claim 7. As such, the combined references fail to teach or suggest each and every feature of claim 7, and therefore do not render claim 7 obvious. Reconsideration and withdrawal of the rejection of claim 7 is requested.

Claim 5 was rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, and in further view of Kuroki. The rejection of claim 5 in paragraph 8 of the Office action is considered to be duplicative of the

rejection of claim 5 in paragraph 5 of the Office action. As such, the rejection is discussed above.

Claims 8 and 9 were rejected under 35 U.S.C. 103(a) as being unpatentable over Matsukawa in view of Yasumoto, and further in view of Styczynski, Murray, and Kuroki. The rejections are traversed for the following reasons.

Claim 8 depends from claim 3, and therefore includes all of the features of claim 3. As was discussed above, claim 3 recites features that are not taught or suggested by Matsukawa, Yasumoto, and Styczynski. Further, it is submitted that the shortcomings of Matsukawa, Yasumoto, and Styczynski are not remedied by Kuroki (cited for teaching a hole in the central part) or Murray (cited for teaching induction curing of injection molded resin).

Thus, claim 8, which depends from claim 3, also recites features that are not taught or suggested by the cited art. Accordingly, a *prima facie* case of obviousness in support of the rejection of claim 8 has not been established. Reconsideration and withdrawal of the rejection of claim 8 is requested.

Claim 9 depends from claim 4, and therefore includes all of the features of claim 4. As was discussed above, claim 4 recites features that are not taught or suggested by Matsukawa, Yasumoto, and Styczynski. Further, it is submitted that the shortcomings of Matsukawa, Yasumoto, and Styczynski are not remedied by Kuroki (cited for teaching a hole in the central part) or Murray (cited for teaching induction curing of injection molded resin).

Thus, claim 9, which depends from claim 4, also recites features that are not taught or suggested by the cited art. Accordingly, a *prima facie* case of obviousness in support of the rejection of claim 9 has not been established. Reconsideration and

withdrawal of the rejection of claim 9 is requested.

In light of the foregoing, it is respectfully submitted that the present application is in a condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any additional fees resulting from this communication, please charge same to our Deposit Account No. 18-0160, our Order No. SHM-15820.

Respectfully submitted,

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